CLAIMS

WHAT IS CLAIMED IS:

1. A single phase, multi-speed induction motor comprising:

a stator core;

a rotor in rotational relationship with the stator core; and

a partially shared winding on the stator core, said partially shared winding being energized in its entirety when it is desirable to operate the motor in a 4-pole configuration and said partially shared winding being energized in less than its entirety when it is desirable to operate the motor in an 8-pole configuration.

2. A motor as set forth in claim 1 wherein the partially shared winding comprises a first winding portion and a second winding portion, wherein said first winding portion is arranged to be energized when it is desirable to operate the motor in the 4-pole configuration and in the 8-pole configuration, and said second winding portion is arranged to be energized only when it is desirable to operate the motor in the 4-pole configuration.

3. A motor as set forth in claim 2 wherein the partially shared winding further comprises a third winding portion and a fourth winding portion, wherein said third winding portion is arranged to be energized when it is desirable to operate the motor in the 4-pole configuration and in the 8-pole configuration, and said fourth winding portion is arranged to be energized only when it is desirable to operate the motor in the 4-pole configuration.

4. A motor as set forth in claim 3 wherein the first, second, third and fourth winding portions are wound on the stator core non-sequentially.

5. A motor as set forth in claim 2 wherein said first winding portion is further arranged to be energized when it is desirable to operate the motor in a 6-pole configuration.

6. A motor as set forth in claim 1 further comprising an unshared winding on the stator core, said unshared winding being energized when it is desirable to operate the motor in a 6-pole configuration.

7. A motor as set forth in claim 1 wherein the stator core comprises a plurality of slots and the partially shared winding includes a first winding portion that is carried in a generally nonsinusoidal distribution within a first group of the plurality slots and a second winding portion that is carried in a generally sinusoidal distribution within a second group of the plurality of slots.

8. A motor as set forth in claim 7 further comprising an unshared winding portion, said unshared winding portion being energized in connection with the first winding portion of the partially shared winding when it is desirable to operate the motor in the 8-pole configuration, and wherein said unshared winding portion is carried in a generally sinusoidal distribution within a third group of the plurality of slots.

9. A motor as set forth in claim 1 further comprising:

an auxiliary starting winding on the stator core; and

a starting switch for energizing the auxiliary winding to initiate a rotation of the rotor, said starting switch de-energizing the auxiliary winding when the rotation of the rotor exceeds a rotational threshold.

10. A motor comprising:

a stator core;

a rotor mounted in rotational relationship with the stator core;

a plurality of windings components wound on the stator core;

a first one of the plurality of winding components and a second one of the plurality of winding components being selectively energized to operate the motor at a 4-pole pole speed; and

a third one of the plurality of winding components and the first one of the plurality of winding components being selectively energized to operate the motor at an 8-pole pole speed such that the second one of the plurality of winding components is only energized when the motor is operated at the 4-pole pole speed.

11. A motor as set forth in claim 10 wherein a fourth one of the plurality of winding components is selectively energized only to operate the motor at a 6-pole pole speed.

12. A single phase, three-speed induction motor comprising:

a stator core;

a rotor mounted in rotational relationship with the stator core;

a first winding being wound on the stator core and being selectively energized in an N-pole configuration wherein N is at least two and is an integer multiple of two, said first winding including a first winding portion and a second winding portion;

a second winding being wound on the stator core and being selectively energized in an M-pole configuration, wherein M is an even integer and is least two-times N; and

wherein said second winding shares the first winding portion of the first winding but not the second winding portion of the first winding.

13. A motor as set forth in claim 12 wherein N is two, four, or eight.

14. A motor as set forth in claim 12 wherein N is four and further comprising a third winding being wound on the stator core and being selectively energized in a 6-pole configuration.

15. A motor arranged to be operated at a plurality of pole speeds, said motor comprising:

a stator core;

a rotor in rotational relationship with the stator core;

a first winding portion on the stator core for operating the motor at a first pole speed, said first winding portion having a substantially sinusoidal wire turn distribution; and

a second winding portion on the stator core for operating the motor at the first pole speed, said second winding portion having a substantially nonsinusoidal wire turn distribution.

16. A motor as set forth in claim 15 further comprising a third winding portion on the stator core being energized in connection with the second winding portion for operating the motor at a second pole speed.

17. A motor as set forth in claim 16 wherein the first pole speed corresponds to a 4-pole configuration and the second pole speed corresponds to an 8-pole configuration.

18. A motor arranged to be operated in a 4-pole configuration and an 8-pole configuration, said motor comprising:

a stator core;

a rotor in rotational relationship with the stator core;

a first winding portion wound on the stator core being energized only when operating the motor in the 4-pole configuration, said first winding portion having a substantially sinusoidal wire distribution; and

a second winding portion wound on the stator core being energized when operating the motor in both the 4-pole configuration and the 8-pole configuration, said second winding portion having a substantially nonsinusoidal wire distribution.

19. A motor as set forth in claim 18 further comprising:

a third winding portion wound on the stator core being energized only when operating the motor in the 4-pole configuration, said third winding portion having a substantially sinusoidal wire distribution; and

a fourth winding portion wound on the stator core being energized when operating the motor in both the 4-pole configuration and the 8-pole configuration, said fourth winding portion having a substantially nonsinusoidal wire distribution.

20. A motor as set forth in claim 19 further comprising:

a third winding portion wound on the stator core and being energized only when operating the motor in the 8-pole configuration such that when the motor is operated in the 8-pole configuration, the second and third winding portions are energized.

21. A motor arranged to be operated in a 4-pole configuration, a 6-pole configuration, and an 8-pole configuration, said motor comprising:

a stator core;

a rotor in rotational relationship with the stator core;

a first winding portion wound on the stator core, said first winding portion being energized in the 4-pole configuration only;

a second winding portion wound on the stator core, said second winding portion being energized in the 6-pole configuration only;

a third winding portion wound on the stator core, said third winding portion being energized in the 8-pole configuration only; and

a fourth winding portion wound on the stator core, said fourth winding portion being energized in the 4-pole configuration and the 8-pole configuration, but not being energized in the 6-pole configuration.

22. A motor as set forth in claim 21 further comprising a fifth winding portion wound on the stator core, said fifth winding portion being energized in the 4-pole configuration, the 6-pole configuration, and the 8-pole configuration.